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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/635,668	08/07/2003	Juergen Hoffmann	033275-408	8893
21839	7590	05/20/2005	EXAMINER	
BURNS DOANE SWECKER & MATHIS L L P			TRIEU, THAI BA	
POST OFFICE BOX 1404			ART UNIT	
ALEXANDRIA, VA 22313-1404			PAPER NUMBER	
			3748	

DATE MAILED: 05/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/635,668	Applicant(s) HOFFMANN ET AL.	
	Examiner Thai-Ba Trieu	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 10 and 11 is/are rejected.
- 7) ☐ Claim(s) 7-9 and 12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/993,545.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

This Office Action is in response to the Amendment filed on March 16, 2005.

Claim 12 was added.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uji (Patent Number 5,417,053); in view of Urbach et al. (Patent Number 5,329,758).

Uji discloses a gas turbine set, with a cooling air system through which at least one cooling air mass flow (20, 21, 23) flows from a compressor (1) to thermally highly loaded components of the gas turbine set, wherein means (10, 36) for increasing the pressure of flowing cooling air are arranged in a cooling air duct of the cooling air system (See Figures 1-2 and 4);

wherein the means for increasing the pressure are ejectors (36) operating with a working fluid (See Figure 4);

wherein the working fluid is a steam mass flow (Coming from 22 to 10) (See Figure 4);

wherein the working fluid flow is an air mass flow branched off from the compressor (1) at a point of higher pressure (at a point where the line 21 is branched off from line 23) (See Figures 1-2)

wherein means (14) for adjusting the working medium mass flow are arranged in a supply duct for the working medium (See Figures 1-2); and

the gas turbine set being a gas turbine set with sequential combustion (See Figures 1-2).

However, Uji fails to disclose the percentage of the working fluid flow being less than 20% of a driven cooling air mass flow.

Urbach teaches that it is conventional in the steam augmented Gas turbine art, to utilize the working fluid mass flow being less than 20%, 10%, and 5% of a driven cooling air mass flow (See Column 3, lines 21-28).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized the percentage of the working fluid flow being less than 20% of a driven cooling air mass flow, as taught by Urbach, to improve the efficiency of the Uji device.

Claims 1 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uji (Patent Number 5,417,053); in view of Urbach et al. (Patent Number 5,329,758), an further in view of Design choice.

The modified Uji device discloses the invention as recited above; however, fails to disclose the air mass flow of the working fluid being less than 10% and 5% of the driven mass flow.

One having an ordinary skill in the gas turbine engine art, would have found the air mass flow of the working fluid being less than 20%, 10% and 5% of the driven mass flow, as a matter of design choice depending on the gas turbine engine requirements. Moreover, there is nothing in the record, which establishes that the claimed the range of the air mass flow of the working fluid being less than 10% and 5% of the driven mass flow, presents a novel of unexpected result (See *In re Kuhle*, 526 F. 2d 553, 188 USPQ 7 (CCPA 1975)).

Allowable Subject Matter

Claims **7-9** and **12** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed March 16, 2005 have been fully considered but they are not persuasive. Accordingly, claims 1-12 are pending.

1. Regarding applicants' arguments set forth on page 5, Paragraphs 4-6, and Page 6, Paragraphs 1-2, with respect to the rejection of Claims 1-6 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,417,053, hereinafter Uji, in view of

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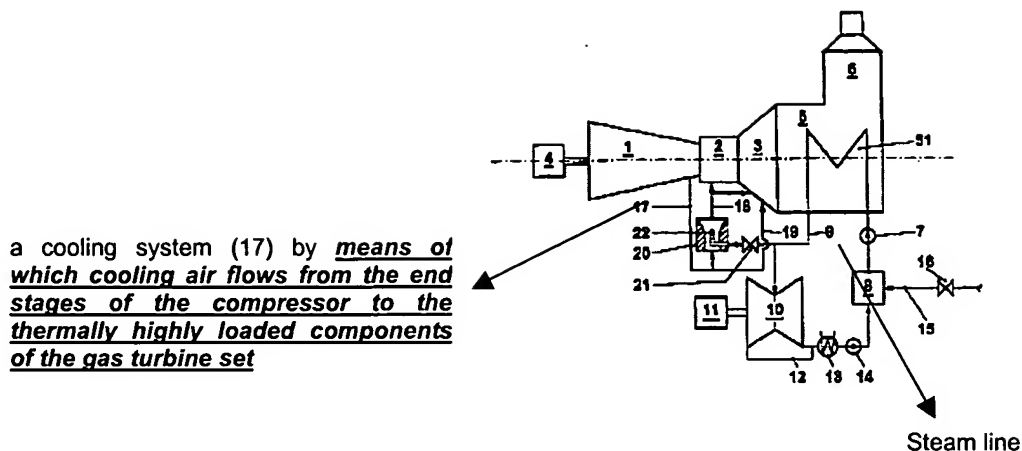
U.S. Patent No. 5,329,758, hereinafter Urbach, applicant asserts that the mixture of compressed air and heated air/steam shown in Uji is not a cooling air mass flow, but rather a combustion air mass flow; that it is not clear what components of Uji are considered to be a cooling air system; and that Uji's device is not a gas turbine set with a cooling air system.

Applicant also request to explain what portion of Uji's device is considered to be a cooling air system, how Uji operates as a gas turbine with a cooling air system, and

The examiner respectfully disagrees with the applicants that the mixture of compressed air and heated air/steam shown in Uji is not a cooling air mass flow, but rather a combustion air mass flow because:

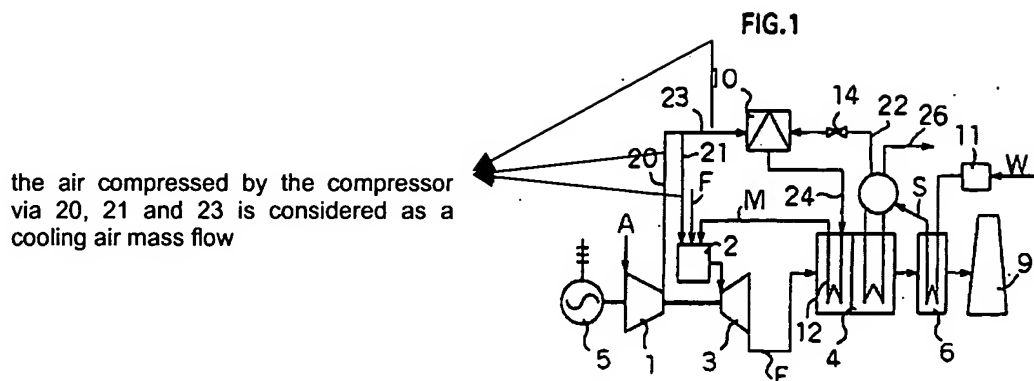
a. On Page 8, lines 17-21, and Page 9, lines 1-2, of the instant application, applicants disclose that "the turbine set is therefore provided with a cooling system (17) by **means of which cooling air flows from the end stages of the compressor to the thermally highly loaded components of the gas turbine set**, and the cooling system (17) branches into a first branch 18 through which the combustor and the first turbine guide row or the first turbine stage are cooled, and a second branch (19) through which cooling air flows to the second and possibly the third stage of the turbine (3)".

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In other words, a cooling system (17) as disclosed by the applicants in the instant application is a line, a duct, a passage, a conduit, a ducting, or a pipe wherein the compressed air, after being compressed by the compressor, is passing through treated as a cooling air mass flow of the so-called cooling air system to cool down the thermally high loaded components (combustor and turbine) of the gas turbine set.

b. Uji (Patent Number 4,417,053) discloses an air line (20) introducing a portion of the compressed air from the compressor (1) to the combustor (2), and introducing a remaining portion of the compressed air to a mixer (10); a main steam line (22); a mixed gas line (24) provided for introducing the mixed gas from mixer 10 to the combustor (2) (Column 3, lines 47-54).



The air being compressed by the compressor (1) via lines 20, 21, 23, 24 and M is considered as a cooling air mass flow of the so-called air cooling system, which is the applicants have stated in the specification and claimed in claim 1.

c. Uji is silent to the words of “a cooling air system”; however, Uji’ s device is a gas turbine set with a cooling air system. The Uji’ s cooling system is the compressed air passing through lines 20, 21, 23, 24 and M to the combustor and the turbine.

2. Regarding applicants’ arguments set forth on page 6, Paragraph 3, applicants state that Uji’s air/steam mixture is heated by the exhaust gasses from the combustor 2, and is not a cooling air mass flow as claimed; that the heated air/steam mixture being directly into the combustor 2 where fuel is added and the mixture is combusted, fed through the combustor 2 and then into the turbine 3; and that a combusted/heated air/steam mixture delivered to the turbine 3 is not functioning as a cooling air mass flow.

The examiner respectfully disagrees with the applicants since after the cooling air mass flow flowing through the ejector (20) and mixing the steam coming from the line (9), the pressure and the temperature of the flow have been increased. The temperature of the flow is increasing but it is still lower than the temperature of the combustor. Thus the flow coming out of ejector is cooler than the air/mixture in the combustor, and used as a flow to cool down the combustor.

Uji discloses, in lines 41-45, the compressed air being boosted in mixer (10) by steam pressure, a mixed gas of air and steam being introduced to heat exchanger (12) and heated by the exhaust gas of the turbine (3); and the compressed mixed gas M being sent to the combustor (2). The compressed mixed air M, after passing a mixer and a heat exchanger, has an increase in the temperature. If being compared to the temperature of the combustor, the temperature of the compressed mixed air is still lower than the temperature of the combustor. Thus, the compressed mixed air M would be considered as a flow to cooling down the combustor.

3. Regarding applicants' arguments set forth on page 7, Paragraph 1, applicants state that Urbach discloses a steam-augmented gas turbine and is not related to cooling air mass flow, and the portion of Urbach identified in the Official Action, column 3, lines 21-28, states that "some commercial version of steam augmented gas turbines accept steam in amounts up to 16% of the compressor air flow..." (emphasis added). Thus, this discussion is not related to cooling air mass flow. Rather, the passage refers to power augmentation steam mass flow related to the compressor mass flow of a gas

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turbine. Therefore, one having ordinary skill in the art would have had no motivation to implement the claimed relationship between a working fluid mass flow and driven cooling air mass flow in light of the disclosure in Urbach.

The examiner respectfully disagrees with the applicants. Since a cooling system (17) as disclosed by the applicants in the instant application is a line, a duct, a passage, a conduit, a ducting, or a pipe wherein the compressed air, after being compressed by the compressor, is passing through treated as a cooling air mass flow of the so-called cooling air system to cool down the thermally high loaded components (combustor and turbine) of the gas turbine set; therefore, the compressor air flow of Urbach is treated as a cooling air mass flow. Then, the steam-compressed air ratio is an amount up to 16% of the compressor air flow/ the cooling air mass flow (less than 20%, 10%, and 5%), which is read on the limitation as claimed in claim 1.

Thus, the use of the steam-compressed air ratio is an amount up to 16% of the compressor air flow/ the cooling air mass flow (less than 20%, 10%, and 5%), as taught by Urbach, would have improved the efficiency of the Uji's device, and would have directed to provide a gas turbine set as recited in claim 1.

4. Regarding applicants' arguments set forth on page 7, Paragraph 3, claims 2-6, which depend on claim 1, are rejected as set forth above.

5. Regarding applicants' arguments set forth on page 7, Paragraph 4, for the limitation of having a working fluid be less than 10% and 5% of the driven mass flow, as

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defined by Claims 10 and 11, it would have been an obvious matter of design choice. As the applicants claim a working fluid being less than 20% of the driven mass flow in claim 1, and less than a working fluid being 10% and 5% of the driven mass flow in claims 10-11, the percentage of the amount of the working fluid being is in the range from 0% to 20% of the driven cooling air mass flow.

Therefore, the rejection under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,417,053, hereinafter Uji, in view of U.S. Patent No. 5,329,758, hereinafter Urbach, as set forth in the rejection of claim 1, is also applied for the rejection of claims 10-11.

The rejection of claims 10-11 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,417,053, hereinafter Uji, in view of U.S. Patent No. 5,329,758, hereinafter Urbach, and further in view of design choice, is the second option, since the percentage of the amount of the working fluid being 10% or 5% is in the range from 0% to 20% of the driven cooling air mass flow. Furthermore, if applicants choose the percentage amount of the working fluid is equal to 0%, the total amount of the cooling air mass flow coming from the compressor will be maximized.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai-Ba Trieu whose telephone number is (571) 272-4867. The examiner can normally be reached on Monday - Thursday (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTB
April 29, 2005

A handwritten signature in black ink, appearing to read 'Thai-Ba Trieu', with a long horizontal flourish extending to the right.

Thai-Ba Trieu
Primary Examiner
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